

## THE JOHN INNES INSTITUTE

**D**R. K. S. DODDS, director of the John Innes Institute, in his annual report\* of the work of the Institute, anticipates that with the removal of the Institute to a site near the University of East Anglia it will be appropriate to re-fashion its research activities in the light of modern requirements of agricultural research. Meanwhile, the contents of the report suggest that the Institute maintains its high traditions in genetical research.

The work of the Institute is concerned both with fundamental genetical research and with plant breeding. The Department of Genetics is concerned mainly with the former and work has continued on genetical control of the enzyme NADP-linked glutamate dehydrogenase in *Neurospora* and new mutants and new complementation relationships are reported. Work has continued on the genetics of *Ustilago* with special reference to the effect of inhibitors of DNA synthesis on mitotic crossing-over. The enzyme nitrate reductase has also been investigated in *Ustilago* mutants some of which are unable to utilize nitrate or nitrite. The results suggest that the ammonium ion acts as an inhibitor of nitrate reductase rather than by repressing the formation of the enzyme. The work also suggests that induction of nitrite reductase lags behind that of nitrate reductase. These findings have implications for nitrate metabolism of higher plants. Investigations on *Antirrhinum majus* show that changing the environmental conditions during growth affects the germination as well as the somatic mutation rate.

Further work in the Department of Cell Biology confirms that much of the rapidly labelled ribonucleic acid in the cell nucleus undergoes breakdown within the cell, largely in the nucleus, to acid-soluble end-products, and it is concluded that much of this short-lived nuclear RNA does not serve as a template for synthesis of protein either in the nucleus or cytoplasm and its function remains obscure. Little is known concerning the relative amounts of DNA and RNA in different parts of the cell nucleus, and attempts are being made to elucidate this on isolated nuclei of different species of higher plants of varying chromosome size. A new technique for isolating nucleoli will help in separating RNA fractions of the nucleus. In cultures of plant callus cells it has been discovered that chlorophyll formation is more adversely

affected by certain synthetic auxins than carotenoid formation, but prolonged treatment with high levels of auxins did not impair the ability of the cells to synthesize chlorophyll and on restoration to a lower level they resumed synthesis. In all the callus cultures investigated the rate of carotenoids to chlorophylls was consistently higher than in leaves.

The possibility of devising mathematical models to interpret responses to selection is being continued by the Department of Applied Genetics. Other topics under investigation in this Department include the relative distribution of tomato mosaic virus in susceptible and resistant strains and the genetics of the tomato and the garden pea. The prevalence of the tendency for English garden peas to throw rogues is attributed to the narrow genetic base on which English garden peas are established, many varieties having common ancestors.

The Department of Potato Genetics is responsible for maintaining the Commonwealth Potato Collection and it is providing material for countries interested in potato breeding. Within the Department it provides material for studying the genetics of cultivated diploids, a necessary preliminary to the establishment of useful commercial varieties. Disease resistance and tuber dormancy are also under investigation. The discovery that seed and tuber dormancy may be under a common biochemical control will help to establish stocks of known dormancy.

With Mr. W. J. C. Lawrence's retirement from the Department of Physiology and Plant Culture the results of his work on the rogue tomato are summarized. Investigations into the effects of day and night temperatures on growth of tomato seedlings indicate that optimum temperature régime is a constant temperature close to 25° C but is dependent on the light intensity. Day temperatures affect growth more than night temperatures. The developing leaves respond to temperature more than the cotyledons. Contrary to general belief, it is found that respiratory loss is unaffected by night temperature and in fact a high night temperature is beneficial in stimulating leaf growth by increased cell multiplication. In glasshouse experiments, relatively high night temperatures are found to be beneficial to young plants even under conditions which are at variance with normal commercial practice.

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\* John Innes Institute. Fifty-fourth Annual Report, 1963. Pp. 58. (Bayerfordbury, Hertford: John Innes Institute, 1964.) 3s.

## MEDICAL RESEARCH AND THE WORLD HEALTH ORGANIZATION

**T**HE *Medical Research Programme of the World Health Organization, 1958-1963\** should be read by all who wish to know what the World Health Organization is doing and has done in the field of medical research. It is a comprehensive survey of the intensified programme of medical research on which the Organization first embarked in 1958. Before that year the promotion of research had, of course, been an integral part of the work of the World Health Organization. In this volume, the director-general, Dr. M. G. Candau, gives for the first time in print a comprehensive report of the medical research programme of the Organization.

The report begins with a general account of the origin, objectives, nature and methods of the programme and

\* World Health Organization. *The Medical Research Programme of the World Health Organization, 1958-1963: Report by the Director-General*. Pp. vii+298. (Geneva: World Health Organization; London: H.M. Stationery Office, 1964.) 18 Sw. francs; 30s.; 6 dollars.

the promotion and co-ordination of the work done by co-operative effort in many countries. The programme is directed essentially at the solution of problems that are better tackled by co-operative effort than by local groups, but it is not merely concerned with those projects which the World Health Organization helps financially. Some of the work helped by the Organization involves the collaboration of experts in several scientific disciplines, such as chemistry, pharmacology, biology and epidemiology. Others are carried out in clinical departments in various countries.

A wide range of subjects is discussed in the report and they are grouped under the following five headings: (1) "Communicable Diseases", that is, virus diseases, enteric and diarrhoeal diseases, tuberculosis, leprosy, malaria, bilharziasis, diseases caused by spirochaetes and filarial nematode worms, other diseases caused by para-

sites and zoonoses. (2) "Non-communicable Diseases", that is, cancer, cardio-vascular, intestinal and rheumatic diseases. (3) "Public Health Practice". (4) "Human Biology and Pharmacology", including sections on immunology; the biological standardization, efficacy, and safety of drugs; human reproduction and genetics (the last-mentioned being the subjects of two recently published issues of the *Technical Report Series*, No. 280† and No. 282‡). (5) "Environmental Health", under which are included the control and resistance of insect and molluscal vectors and their resistance to insecticides and molluscicides.

Annexes to the report by the director-general give the names of the members of the Organization's Inter-

national Advisory Committee on Medical Research; details of the meetings of the Organization's Scientific Groups and other research meetings; information about its co-operative research projects and about grants awarded to workers in various countries and the subjects for which the grants were given; as well as information about the Organization's Reference centres and collaborating laboratories in various countries. G. LAPAGE

† *Technical Report Series*. No. 280: *Biology of Human Reproduction*—Report of a WHO Scientific Group. Pp. 30. (Geneva: World Health Organization; London: H.M. Stationery Office, 1964.) 1 Sw. franc; 1s. 9d.; 0.30 dollar.

‡ *Technical Report Series*. No. 282: *Human Genetics and Public Health*—Second Report of the WHO Expert Committee on Human Genetics. Pp. 38. (Geneva: World Health Organization; London: H.M. Stationery Office, 1964.) 3 Sw. francs; 5s.; 1 dollar.

## THE WORLD FEDERATION OF SCIENTIFIC WORKERS

THE *Charter for Scientific Workers and the Constitution of the World Federation of Scientific Workers*, which was formulated soon after the foundation of the Federation in 1946, has now been re-issued in order to make the work of the Federation more widely known\*.

The Federation claims to be the only considerable organization promoting co-operation between representatives of both the East and the West which has survived the rigours of the 'cold war'; it now represents more than 200,000 scientific workers in some 30 States.

The *Charter* first affirms the responsibilities of scientific workers: (1) to science, in promoting the integrity of scientific work and resisting the suppression or distortion of scientific knowledge, by full publication of results, co-operation with other scientific workers regardless of racial or national barriers, and by securing the growth of science with due regard to the balance between fundamental and applied science; (2) to the community, by studying the implications of science, by endeavouring to ensure that all knowledge is widely understood and used, and by searching for new ways of utilizing scientific knowledge, especially in fighting famine and disease and in improving conditions of life and work, as well as by studying all aspects of public administration so as to ensure that scientific methods are fully used; (3) to the world, by maintaining the international character of science, by studying the underlying causes of war, by assisting agencies seeking to prevent war, by building stable bases for peace, by working against the diversion of scientific effort in preparation for war, and by resisting movements inspired by anti-scientific ideas. Secondly the *Charter* is concerned with the state of science and scientific workers in securing that science is adequately financed, that results of research are rapidly developed and applied, that research is planned to take into account the intrinsic developments of fundamental science, that

\* *Charter for Scientific Workers and Constitution of the World Federation of Scientific Workers*. Pp. 15. (London: World Federation of Scientific Workers, 1964.)

the needs of communities are scientifically assessed, and that it is ensured that scientific workers participate actively in the formulation of policy at all levels. Thirdly, the *Charter* is concerned with the opportunities of becoming a scientific worker, including secondary education and university education, and opportunities for part-time studies. Fourthly, it is concerned with facilities for employment of scientists; fifthly, their conditions of work; sixthly, the organization of scientific work, and, finally, the special needs for science in under-developed countries.

Accordingly, the *Constitution* details the aims of the Federation as being to promote understanding and co-operative action between member organizations in assisting it and its constituent members: (a) to work towards the fullest utilization of science in promoting peace and welfare of mankind and to ensure especially that it is applied to help solve the urgent problems of the time; (b) to promote international co-operation in science and technology, particularly in close collaboration with the United Nations Educational, Scientific, and Cultural Organization; (c) to encourage the international exchange of scientific knowledge, and of scientific workers; (d) to preserve and encourage the freedom and co-ordination of scientific work both nationally and internationally; (e) to encourage improvements in teaching science and to spread as far afield as possible the knowledge of science and its social implications; (f) to achieve a closer integration between the natural and social sciences; (g) to improve the professional, social, and economic status of scientific workers; (h) to encourage scientific workers to take an active part in public affairs, and to make them more conscious of, and more responsive to, the progressive forces at work within society. Membership of the Federation is open to any organization of scientific workers or any group of such organizations in any country, subject to meeting the definitions of scientific workers and qualifications given in the appropriate clause of the *Constitution*.

## PROGRESS IN CONCRETE RESEARCH

REFERRING to the activities of the Cement and Concrete Association in his introduction to the report for 1963\*, the Hon. Leo Russell, director-general of the Association, stresses particularly the decision of its member companies to increase the income of the Association during that year, made necessary not only by rising costs but also to allow for considered expansion of important projects in the field of concrete research. "Apart

\* Cement and Concrete Association. Report for the year 1963. Pp. 108. (London: Cement and Concrete Association, 1964.)

from enabling the Association to carry out more effectively the work to which it is already committed, the increased resources will make it possible to undertake some much needed new research and development work".

The report is impressive in its survey of the many research problems and development schemes present in the 1963 programme. In the research section, the subjects include: the constitution of anhydrous cements and cement minerals; reactions in the system  $\text{CaO}-\text{SiO}_2-\text{H}_2\text{O}$ ; cement hydration; problems in chemical analysis;